SAIC0056-US **PATENT**

ABSTRACT

Described herein is a process for objectively and automatically determining spectral endmembers and transforming Spectral Mixture Analysis (SMA) from a widely used research technique into a user-friendly tool that can support the needs of all types of 5 remote sensing. The process extracts endmembers from a spectral dataset using a knowledge-based approach. The process identifies a series of starting spectra that are consistent with a scene and its environment. The process then finds endmembers iteratively, selecting each new endmember based on a combination of physically and statistically-based tests. The tests combine spectral and spatial criteria and decision trees to ensure that the resulting endmembers are physically representative of the scene.

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